**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 571**

**Docket No. NHTSA-2012-0037**

**RIN: 2127-AK20**

# Federal Motor Vehicle Safety Standards; Bus Emergency Exits and Window Retention and Release

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

**ACTION:** Final rule.

**SUMMARY:** In this final rule, which was preceded by a notice of proposed rulemaking, NHTSA is making several housekeeping amendments to the Federal motor vehicle safety standard for bus emergency exits. First, based on a proposal made in response to a petition for rulemaking from the School Bus Manufacturers Technical Council (SBMTC), NHTSA amends the standard to specify that the exterior release (the exterior handle) for school bus rear emergency exit doors may be located opposite the door hinges, rather than located in the middle of the door. Second, this final rule also clarifies the standard as to the number of force applications that are required to open a window or roof emergency exit. Third, in response to a comment on the proposed rule, this document makes a technical correction by removing a reference to a no-longer existent figure. These amendments correct or clarify the requirements of the standard. We believe most, if not all, school buses are currently designed to meet the corrected or clarified requirements.

**DATES:** The effective date is April 1, 2013**.** Manufacturers are provided optional early compliance with this final rule beginning **[insert date of publication of this document in the FEDERAL REGISTER].**

Petitions for reconsideration: Petitions for reconsideration of this final rule must be received no later than **[insert date 45 days after date of publication of this document in the FEDERAL REGISTER].**

**ADDRESSES:** Petitions for reconsideration of this final rule must refer to the docket number set forth above and be submitted to: Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, S.E., Washington, D.C. 20590.

**FOR FURTHER INFORMATION CONTACT:** For non-legal issues, Mr. Conor McCafferty, Office of Crashworthiness Standards (telephone: 202-366-1046) (fax: 202-493-2990), NVS-113. For legal issues, Ms. Deirdre Fujita, Office of the Chief Counsel (telephone: 202-366-2992) (fax: 202-366-3820), NCC-112. These officials can be reached at the National Highway Traffic Safety Administration, 1200 New Jersey Avenue, S.E., Washington, DC 20590.

**SUPPLEMENTARY INFORMATION:**

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## I. Background

Federal Motor Vehicle Safety Standard (FMVSS) No. 217, "Bus emergency exits and window retention and release,"[1] applies to buses, including school buses, except buses

[1] 49 CFR 571.217

manufactured for the purpose of transporting persons under physical restraint. The purpose of the standard is to minimize the likelihood of occupants being thrown from the bus and to provide a means of readily accessible emergency egress. The standard establishes requirements for the retention of windows other than windshields in buses, and establishes operating forces, opening dimensions, and markings for bus emergency exits.

In this final rule, we make several housekeeping amendments to FMVSS No. 217. First, NHTSA amends the standard to specify that the exterior release (the exterior handle) for school bus rear emergency exit doors may be located at the side opposite the door hinges, rather than located in the middle of the door. Second, this final rule also clarifies the standard as to the number of force applications that are required to open a window or roof emergency exit. Third, this document removes a reference to a no-longer existent figure.

The notice of proposed rulemaking (NPRM) upon which this final rule is based was published on December 28, 2009 (74 FR 68558) (Docket No. NHTSA-2009-0190).

We received seven comments on the NPRM from school bus manufacturers and private individuals.[2] None of the commenters opposed the proposal, several made suggested changes to specific provisions, and some commented on matters beyond the scope of the rulemaking.

## II. Location of Exterior Release Mechanism (Exterior Handle)

FMVSS No. 217 (S5.3.3.1(a)) specifies requirements for the location of the interior and exterior releases (handles) for side and rear emergency door exits for school buses with a gross vehicle weight rating (GVWR) greater than 4,536 kilograms (10,000 pounds) ("large school buses").

[2] NHTSA received comments from Blue Bird Body Company (Blue Bird), Thomas Built Buses (Thomas Built), the National Truck Equipment Association (NTEA), SBMTC, and W. Coffey, N. Horner, and J. Walsh. This final rule does not discuss issues raised by commenters that were beyond the scope of the rulemaking, such as suggested ideas to possibly improve emergency egress or ideas to improve overall school bus occupant protection. Comments can be read at Docket No. NHTSA-2009-0190.

The standard currently specifies at S5.3.3.1(a) and Figure 3D of the standard that both the interior and exterior releases (handles) for rear emergency exit doors be located in the center of the door.[3] However, school bus manufacturers have always understood the standard as requiring only interior releases (interior handles) to be in the center of the door. They believed that the exterior handle may be near the edge of the door on the side opposite the hinges. They further believed that an exterior release (exterior handle) so located provides more leverage and may be designed to require less force to open the rear emergency exit door as compared to an exterior handle located in the center of the door.[4]

SBMTC petitioned the agency to amend FMVSS No. 217 to specify that the exterior release (exterior handle) for school bus rear emergency exit doors may be located near the edge of the door on the side opposite the hinges. Regarding interior releases (interior handles), the petitioner believed that the interior handles should be in the center of the door so that it is visible to bus occupants and not obscured by seat backs if the door is wider than the bus's center aisle.

In the NPRM, we tentatively agreed that the school bus manufacturers' current practice of placing the exterior rear emergency exit door release (exterior handle) near the edge of the door on the side opposite the hinges better meets the need for safety than placing the exterior release in the center of the door. Releases (exterior handles) placed opposite the hinges would

[3] S5.3.3.1(a) specifies that the manual interior and outside releases (handles) are located: "Within the high force access region shown in Figure 3A for a side emergency exit door, and in figure 3D for a rear emergency exit door." Figure 3D consists of two drawings. The left-side drawing shows the side-view of the high force access region. As shown in the left-side drawing, the release (handle) may be located at any point from the left side of the door to the right. However, the right-side drawing, giving a different perspective of the rear exit (front view), shows that the high force access region is a narrow area in the center of the door. Since S5.3.3.1(a) requires the interior and exterior releases (handles) to be "[w]ithin the high force access region shown in… figure 3D for a rear emergency exit door," the releases must be in that narrow area in the center of the door shown in the right-side drawing of Figure 3D.

[4] All things being equal, the longer the distance between the handle and the door hinges, the less force is required to open the door. Thus, for optimum leverage, the handle should be operated from the side of the door as far away as possible from the door hinges.

require less force to pull open the door for persons outside the school bus than comparable releases located in the center.

Accordingly, we proposed to amend FMVSS No. 217 to specify that the exterior release (exterior handle) for the exit must only be in the high force access region shown in the left-side drawing (side view) of current Figure 3D; that is, only the vertical dimensions of the high force region are specified for the location of the exterior handle. We sought comment on whether we should require the exterior release to be no further than 51 millimeters (mm) (two inches) away from the edge of the door opposite the hinges.

We also clarified the requirement that the interior release (interior handle) for a rear emergency exit must be in the high force access region shown in both drawings of current Figure 3D, i.e., in the center of the door.

In addition, to make Figure 3D easier to understand, we proposed to rename the left-side drawing "Figure 3D(1)" and the right-side drawing "Figure 3D(2)."

**Comments**

All commenters responding to this issue agreed with NHTSA that FMVSS No. 217 should be amended so that it specifies that the exterior release (exterior handle) for school bus rear emergency exit doors be located near the edge of the door on the side opposite the hinges.

However, no commenter supported the idea to limit placement of the exterior release to no further than 51 mm (two inches) from the edge of the door opposite the hinges. SBMTC stated that the NPRM did not give an explanation on the reasoning behind this proposal. SBMTC stated that the shaft of the exterior emergency door release handle on the majority of school buses is located approximately 76 to 127 mm (3 to 5 inches) from the edge of the door. SBMTC also noted that due to current school bus emergency door construction and because

emergency exits are already required to meet release forces as specified in FMVSS No. 217, it does not see any benefit or need to limit the maximum distance from the edge of the door to 51 mm (two inches).

Thomas Built believed that the 51 mm (two inch) limitation was arbitrary. Thomas Built requested that the edge dimension be determined by each individual manufacturer's design parameters because it would give the manufacturers some tolerance and flexibility in their respective designs.

NTEA believed that most manufacturers' exterior release handles on emergency doors are farther away than 51 mm (two inches) from the edge of the door. NTEA is unaware of any safety need to require design changes such that exterior release handles are no further than 51 mm (2 inches) from the edge of the door.

**Response**

We are adopting the proposed amendment, except for the requirement that the exterior release handle must be no further than 51 mm (two inches) away from the edge of the door. The purpose of the limitation would have been to ensure the emergency exit door opened within the force requirements set forth in the standard. After reviewing the comments, we agree with SBMTC that the force requirements specified in the standard for opening emergency exits are sufficient to meet this goal. It is the opening force, not the closeness to the edge of the door, that is important for opening the door from the outside.

We also agree with Thomas Built that the location of the exterior release handle should be determined by the individual manufacturer's design parameters because the door design may vary based on each manufacturer's model. Thus, specifying an exact location would be overly design restrictive when the standard already prescribes the maximum force to open the exit.

We received no comment on the issue of the effective date for the changes to the exterior release handle for the school bus rear emergency exit door.

## III. Figure 3D

In its comment, Blue Bird stated that Figure 3D already has the required two drawings and only needs to change the width of the "ACCESS REGION FOR HIGH FORCES" in the right-hand drawing to span the entire door. Blue Bird stated that the proposal to split Figure 3D into Figures 3D(1) and 3D(2) did not seem necessary and may recreate the problem of using a single two-dimensional drawing to communicate three-dimensional information.

**Response**

We do not agree with Blue Bird's suggestion that the high access region depicted in Figure 3D(2) (right side drawing) extends across the entire width of the door. The access region depicted in Figure 3D(2) (front view of the access regions for the rear emergency exit without rear obstruction) provides the location requirement for the interior release mechanism (interior handle) and ensures that it is in a location accessible from inside of the school bus. As we explained in the NPRM, the interior release handle for the emergency exit was intentionally required to be located in the center of the door so that it is visible to bus occupants and the view of the handle is not obstructed by seat backs. Further, as noted by SBMTC, the exit would be opened from inside by a pushing motion rather than a pulling motion, so locating the handle in the center of the door does not markedly increase the difficulty of opening the door.

Further, we do not agree with Blue Bird's suggestion not to split Figure 3D into Figures 3D(1) and 3D(2). Splitting Figure 3D into two parts allows referencing the two figures individually, to provide separate location requirements for the interior and exterior release mechanisms. As explained earlier, we intentionally described the interior handle as being in the

center of the door, as indicated by Figures 3D(1) (side view) and 3D(2) (front view). However, for exterior release handles, which are not at risk of being obscured, we are only specifying the vertical dimensions of the high force region and are providing flexibility to the manufacturer to place the exterior release handle anywhere along the width of the door, as indicated by Figure 3D(1) alone (with vertical dimensions shown in the front view – 3D(2)).

## IV. Window or Roof Emergency Exit Release

FMVSS No. 217 (S5.3.3.2) specifies the number, location, type, and magnitude of force applications to open emergency exit windows in all school buses, and S5.3.3.3 does the same for school bus emergency roof exits. At S5.3.2, the standard specifies the number, location, type and magnitude of force applications to open emergency exits in buses other than school buses.

These paragraphs of the standard specify, among other things: "In the case of [an exit] with one release mechanism, the mechanism shall require two force applications to release the exit. In the case of [an exit] with two release mechanisms, each mechanism shall require one [force] application to release the exit." The language first appeared in a November 2, 1992 final rule (57 FR 49423).

In a June 13, 1994 interpretation letter to Blue Bird, NHTSA stated that the sentence in S5.3.3.2, "In the case of windows with one release mechanism, the mechanism shall require two force applications to release the exit," was incorrect. The agency stated that the sentence was meant to read: "In the case of windows with one release mechanism, the exit shall require two force applications to open." (Emphasis added.) That is to say, the agency intended a window or roof exit with one release mechanism to be able to be opened with only two force applications: one force application that undoes the release mechanism, and a second force application that opens the exit. The concern is that, because of the current wording of S5.3.3.2, the paragraph

could be read as specifying that two force applications are used to activate the single mechanism and that a third force application is applied to open the exit.

The NPRM proposed to change the wording so that it states more clearly what the agency had intended. NHTSA proposed to make S5.3.2, S5.3.3.2, and S5.3.3.3 clearer by separating the requirements for operating an exit's release mechanism(s) from the requirements for opening the exit. NHTSA proposed to specify, for exits with one release mechanism, the exit must require two force applications to open: one to release the mechanism and another to open the exit. For exits with two release mechanisms, there must be a total of three force applications to open the exit: one force application must be applied to each of the two mechanisms to release the mechanism, and another force must be applied to open the exit.

We viewed this rulemaking as primarily a housekeeping measure and stated our belief in the NPRM that all emergency window and roof exits are currently designed to meet the requirements as the agency had intended to be understood.

**Comments**

We received no comments on this issue. Thus, no manufacturer disagreed with our statement that all emergency window and roof exits are currently designed to meet the existing requirements regarding the number of force applications. Blue Bird stated generally that it was "supportive of this NPRM's housekeeping measures," which we assume refers to this as well as the other proposed amendments.

**Response**

For the reasons in the NPRM, we are adopting the changes proposed in the December 2009 NPRM.

## V. Removing Reference to Figure 6B

In its comment, Blue Bird pointed out another housekeeping measure. In an August 12, 2005 final rule (70 FR 47131), we amended FMVSS No. 217 by, among other things, removing Figure 6B from the standard. Inadvertently, we did not remove a reference to Figure 6B in the regulatory text of S5.4.3.1(a). Today's final rule corrects S5.4.3.1(a) by removing the reference to Figure 6B.

## VI. Rulemaking Analyses And Notices

### Executive Order 12866 and DOT Regulatory Policies and Procedures

This rulemaking document was not reviewed by the Office of Management and Budget under E.O. 12866. It is not considered to be significant under E.O. 12866 or the Department's Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). This final rule is of a housekeeping nature. We believe that all vehicles currently meet the changes discussed in this final rule and that there will be no costs associated with this rule.

### Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions), except as provided below. The Small Business Administration's regulations at 13 CFR Part 121 define a small business, in part, as a business entity "which operates primarily within the United States." (13 CFR 121.105(a)). No regulatory flexibility analysis for a rule is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the Regulatory Flexibility Act to require

Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

NHTSA has considered the effects of this rulemaking action under the Regulatory Flexibility Act. I hereby certify that this final rule will not have a significant economic impact on a substantial number of small entities. The basis for the certification is that this final rule is of a housekeeping nature. It does not change any FMVSS No. 217 requirements that school bus manufacturers are now meeting.

**National Environmental Policy Act**

NHTSA has analyzed this rulemaking action for the purposes of the National Environmental Policy Act. The agency has determined that implementation of this action does not have any significant impact on the quality of the human environment.

**Executive Order 13132 (Federalism)**

NHTSA has examined today's final rule pursuant to Executive Order 13132 (64 FR 43255, August 10, 1999) and concluded that no additional consultation with States, local governments or their representatives is mandated beyond the rulemaking process. The agency has concluded that this housekeeping rulemaking does not have sufficient federalism implications to warrant consultation with State and local officials or the preparation of a federalism summary impact statement. The final rule does not have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

NHTSA rules can preempt in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision: When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in

effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. 49 U.S.C. § 30103(b)(1). It is this statutory command by Congress that preempts any non-identical State legislative and administrative law addressing the same aspect of performance.

The express preemption provision described above is subject to a savings clause under which "[c]ompliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law." 49 U.S.C. § 30103(e) Pursuant to this provision, State common law tort causes of action against motor vehicle manufacturers that might otherwise be preempted by the express preemption provision are generally preserved. However, the Supreme Court has recognized the possibility, in some instances, of implied preemption of such State common law tort causes of action by virtue of NHTSA's rules, even if not expressly preempted. This second way that NHTSA rules can preempt is dependent upon there being an actual conflict between an FMVSS and the higher standard that would effectively be imposed on motor vehicle manufacturers if someone obtained a State common law tort judgment against the manufacturer, notwithstanding the manufacturer's compliance with the NHTSA standard. Because most NHTSA standards established by an FMVSS are minimum standards, a State common law tort cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist - for example, when the standard at issue is both a minimum and a maximum standard - the State common law tort cause of action is impliedly preempted. See Geier v. American Honda Motor Co., 529 U.S. 861 (2000).

Pursuant to Executive Order 13132 and 12988, NHTSA has considered whether this rule could or should preempt State common law causes of action. The agency's ability to announce

its conclusion regarding the preemptive effect of one of its rules reduces the likelihood that preemption will be an issue in any subsequent tort litigation.

To this end, the agency has examined the nature (e.g., the language and structure of the regulatory text) and objectives of today's rule and finds that this rule prescribes only housekeeping amendments. Accordingly, NHTSA does not intend that this rule preempt state tort law.

**Executive Order 12988 (Civil Justice Reform)**

With respect to the review of the promulgation of a new regulation, section 3(b) of Executive Order 12988, "Civil Justice Reform" (61 FR 4729, February 7, 1996) requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect; (2) clearly specifies the effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct, while promoting simplification and burden reduction; (4) clearly specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. This document is consistent with that requirement.

Pursuant to this Order, NHTSA notes as follows. The preemptive effect of this rule is discussed above. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceeding before they may file suit in court.

**Paperwork Reduction Act**

Under the Paperwork Reduction Act of 1995, a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid Office of

Management and Budget (OMB) control number. There are no collections of information associated with today's final rule. Thus, the Paperwork Reduction Act does not apply.

**National Technology Transfer and Advancement Act**

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104-113, section 12(d) (15 U.S.C. 272) directs NHTSA to use voluntary consensus standards in its regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE). The NTTAA directs the agency to provide Congress, through the OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

After carefully reviewing the available information, NHTSA has determined that there are no voluntary consensus standards relevant to this rulemaking, as this final rule clarifies existing FMVSS No. 217 requirements.

**Unfunded Mandates Reform Act**

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA) requires Federal agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of more than $100 million in any one year (adjusted for inflation with base year of 1995). This final rule will not result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector of more than $100 million annually.

**Executive Order 13211**

Executive Order 13211 (66 FR 28355, May 18, 2001) applies to any rulemaking that: (1) is determined to be economically significant as defined under E.O. 12866, and is likely to have a significantly adverse effect on the supply of, distribution of, or use of energy; or (2) that is designated by the Administrator of the Office of Information and Regulatory Affairs as a significant energy action. This rulemaking is not subject to E.O. 13211.

**Regulation Identifier Number (RIN)**

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

**Privacy Act**

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477 at 19478).

**List of Subjects in 49 CFR Part 571**

Labeling, Motor vehicle safety, Reporting and recordkeeping requirements, Tires.

In consideration of the foregoing, NHTSA amends 49 CFR part 571 as follows:

**PART 571 – FEDERAL MOTOR VEHICLE SAFETY STANDARDS**

1. The authority for part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117 and 30166; delegation of authority at 49 CFR 1.50.

2. Section 571.217 is amended by:

a. Revising S5.3.2;

b. Adding S5.3.2.1(a) and S5.3.2.1(b);

c. Revising S5.3.3.1(a);

d. Revising S5.3.3.2;

e. Adding S5.3.3.2.1(a) and S5.3.3.2.1(b);

f. Revising S5.3.3.3;

g. Adding S5.3.3.3.1(a) and S5.3.3.3.1(b);

h. Revising S5.4.3.1(a); and,

i. Revising Figure 3D.

The revised and added text and figure read as follows:

**§571.217 Bus emergency exits and window retention and release.**

* * * * *

S5.3.2 (a) When tested under the conditions of S6, both before and after the window retention test required by S5.1, each emergency exit not required by S5.2.3 shall allow manual release of the exit by a single person, from inside the passenger compartment, using force applications each of which conforms, at the option of the manufacturer, either to S5.3.2.1(a) or S5.3.2.1(b).

(b) Each exit described in S5.3.2(a) shall have no more than two release mechanisms. For exits with one release mechanism, the exit shall require two force applications to open the exit: one force application shall be applied to the mechanism and another force application shall

be applied to open the exit. The force application for the release mechanism must differ by not less than 90 degrees and not more than 180 degrees from the direction of the initial motion to open the exit. For exits with two release mechanisms, there shall be a total of three force applications to open the exit: one force application shall be applied to each of the two mechanisms to release each mechanism, and another force shall be applied to open the exit. The force application for at least one of the release mechanisms must differ by not less than 90 degrees and not more than 180 degrees from the direction of the initial motion to open the exit. The force applications for the mechanism(s) must conform to either S5.3.2.1(a) or S5.3.2.1(b), as appropriate.

S5.3.2.1(a) Low-force application.

(1) Location: As shown in Figure 1 or Figure 3.

(2) Type of motion: Rotary or straight.

(3) Magnitude: Not more than 90 N.

(b) High-force application.

(1) Location: As shown in Figure 2 or Figure 3.

(2) Type of motion: Straight and perpendicular to the undisturbed exit surface.

(3) Magnitude: Not more than 270 N.

S5.3.3 * * *

S5.3.3.1 * * *

(a) Location: Within the high force access region shown in Figure 3A for a side emergency exit door, within the high force access region shown in both Figure 3D(1) and Figure 3D(2) for an interior release mechanism for a rear emergency exit door, and within the high force access region shown in Figure 3D(1) for an exterior release mechanism for a rear emergency exit

door.

* * * * *

S5.3.3.2 When tested under the conditions of S6., both before and after the window retention test required by S5.1, each school bus emergency exit window shall allow manual opening of the exit by a single person, from inside the passenger compartment. Each exit shall have no more than two release mechanisms. The mechanism(s) must be located in either the specified low-force or high-force regions (at the option of the manufacturer), with force applications and types of motions that conform to either S5.3.3.2.1(a) or (b) of this section, as appropriate. For exits with one release mechanism, the exit shall require two force applications to open the exit: one force application shall be applied to the mechanism and another force application shall be applied to open the exit. The force application for the release mechanism must differ by not less than 90 degrees and not more than 180 degrees from the direction of the initial motion to open the exit. For exits with two release mechanisms, there shall be a total of three force applications to open the exit: one force application shall be applied to each of the two mechanisms to release each mechanism, and another force shall be applied to open the exit. The force application for at least one of the release mechanisms must differ by not less than 90 degrees and not more than 180 degrees from the direction of the initial motion to open the exit. Each release mechanism shall operate without the use of remote controls or tools, and notwithstanding any failure of the vehicle's power system. When a release mechanism is unlatched and the vehicle's ignition is in the "on" position, a continuous warning shall be audible at the driver's seating position and in the vicinity of that emergency exit.

S5.3.3.2.1(a) Emergency exit windows – <u>Low-force application</u>.

(1) Location: Within the low-force access regions shown in Figures 1 and 3 for an

emergency exit window.

(2) Type of motion: Rotary or straight.

(3) Magnitude: Not more than 90 N.

(b) Emergency exit windows – High-force application.

(1) Location: Within the high-force access regions shown in Figures 2 and 3 for an emergency exit window.

(2) Type of motion: Straight and perpendicular to the undisturbed exit surface.

(3) Magnitude: Not more than 180 N.

S5.3.3.3 When tested under the conditions of S6., both before and after the window retention test required by S5.1, each school bus emergency roof exit must allow manual opening of the exit by a single person, from inside the passenger compartment. Each exit shall have no more than two release mechanisms. The mechanism(s) must be located in either the specified low-force or high-force regions (at the option of the manufacturer), with force applications and types of motions that conform to either S5.3.3.3.1(a) or (b) of this section, as appropriate. For exits with one release mechanism, the exit shall require two force applications to open the exit: one force application shall be applied to the mechanism and another force application shall be applied to open the exit. The force application for the release mechanism must differ by not less than 90 degrees and not more than 180 degrees from the direction of the initial motion to open the exit. For exits with two release mechanisms, there shall be a total of three force applications to open the exit: one force application shall be applied to each of the two mechanisms to release each mechanism, and another force shall be applied to open the exit. The force application for at least one of the release mechanisms must differ by not less than 90 degrees and not more than 180 degrees from the direction of the initial motion to open the exit.

S5.3.3.3.1(a) Emergency roof exits – Low-force application.

(1) Location: Within the low force access regions shown in Figure 3B, in the case of buses whose roof exits are not offset from the plane specified in S5.2.3.2(b)(5). In the case of buses which have roof exits offset from the plane specified in S5.2.3.2(b)(5), the amount of offset shall be used to recalculate the dimensions in Figure 3B for the offset exits.

(2) Type of motion: Rotary or straight.

(3) Magnitude: Not more than 90 N.

(b) Emergency roof exits – High-force application.

(1) Location: Within the high force access regions shown in Figure 3B, in the case of buses whose roof exits are not offset from the plane specified in S5.2.3.2(b)(5). In the case of buses which have roof exits offset from the plane specified in S5.2.3.2(b)(5), the amount of offset shall be used to recalculate the dimensions in Figure 3B for the offset exits.

(2) Type of motion: Straight and perpendicular to the undisturbed exit surface.

(3) Magnitude: Not more than 180 N.

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S5.4.3.1 * * *

(a) In the case of side emergency exit doors, any portion of the wheelchair securement anchorage is within the space bounded by the interior side wall and emergency exit door opening, transverse vertical planes 305 mm (12 inches) forward and rearward of the center of any side emergency exit door restricted area, and a longitudinal vertical plane through the longitudinal centerline of the school bus, as shown in Figure 6A.

* * * * *

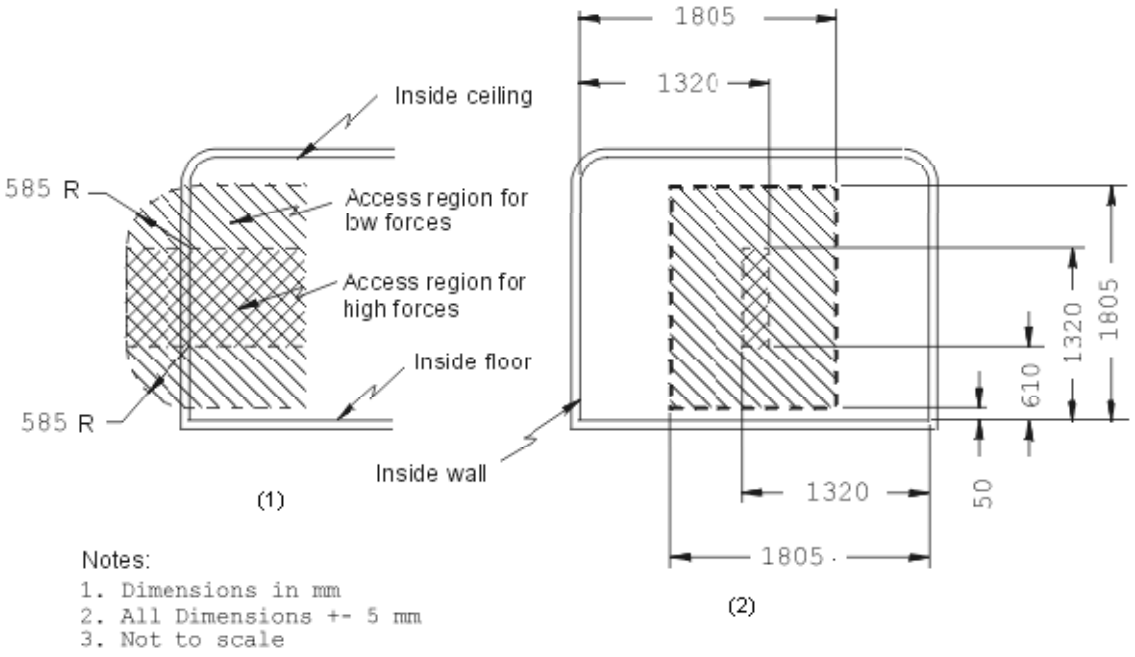
Inside ceiling
585 R
Access region for low forces
Access region for high forces
Inside floor
585 R
Inside wall
(1)
1805
1320
1320
1805
610
50
1320
1805
(2)
Notes:
1. Dimensions in mm
2. All Dimensions +- 5 mm
3. Not to scale

Figure 3D

*  *  *  *  *

Issued on: March 23, 2012

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Administrator

Billing Code: 4910-59-P

[FR Doc. 2012-7626 Filed 03/29/2012 at 8:45 am; Publication Date: 03/30/2012]